

Challenges Faced by Trainers in Implementing Competence-Based Training (CBT) in Rwanda TVET Institutions: A Case of Rwanda Polytechnic

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Abstract – Rwandan Technical Vocational Education and Training (TVET) has embraced the Competence-based Training (CBT) approach to enhance graduates' employability skills and address the nation's need for skilled workers. However, the implementation of this promising method faces challenges. A recent investigation examined the obstacles encountered by instructors in Rwanda's TVET institutions as they adopt the CBT framework. The study aimed to evaluate trainers' perceptions of CBT, explore its significance in teaching methods, and identify challenges. The research outcomes are expected to provide valuable insights to the Ministry of Education, Rwanda Polytechnic's Integrated Polytechnic Regional Colleges (IPRCs), development partners in the TVET sector, and future scholars. Utilizing qualitative methodologies like comprehensive interviews, data was meticulously gathered and analyzed. The study concluded with actionable recommendations to improve the implementation of the CBT model in Rwandan TVET institutions. This initiative aims to bridge the gap between theoretical learning and practical skill development, thereby strengthening the workforce with competent professionals capable of meeting the changing demands of the nation's economy.

Keywords – Trainer Challenges, TVET, CBT Implementation.

LIST OF ABBREVIATIONS

CBT	Competence-based Training
DQA	Director of Quality Assurance
EDPRS	Economic Development and Poverty Reduction Strategy
IPRCs	Integrated Polytechnic Regional Colleges
ISCED	International Standard Classification of Education
NICHE	Netherlands Initiative for Capacity Development in Higher Education
RP	Rwanda Polytechnic
SDG	Sustainable Development Goals
TSS	Technical Secondary School
TVE	Technical Vocational Education Training
UNESCO	United Nations Educational, Scientific and Cultural Organization
VET	Vocational Educational Training
VTC	Vocational Training Centre
WDA	Workforce Development Authority
WE	Workplace Education

I. INTRODUCTION

Competency-based training (CBT) is a curriculum which based on a practical educational approach where it emphasizes the need for students to acquire the knowledge, skills, understanding, attitudes, or values necessary to succeed in their chosen profession or occupation (Boahin, 2014). More than 40 years ago, competency-based education was first introduced to society. The approach to education was first used in the United States of America in the late 1960s. Competency-based education has historically been practiced in countries such as Australia, Germany, the Netherlands, the United Kingdom, and others. The way the approach has been applied, however, varies depending on the historical, social, economic, and technological development of each country.(Zakaria et al., 2018)

The CBET is said to be important for the advancement of science and technology, particularly in terms of training students in areas that are in line with occupational and job skills, producing graduates who are more capable in accordance with employers' needs(Kanyonga et al., 2019). In particular, the Competence-based training approach was successful in producing competent graduates in the majority of European nations. Some African nations began to adopt it as a result of this success, including Rwanda (Nsengimana, 2020).

Assuring qualified graduates with exceptional and competent personalities is a top priority for trainers in technical vocational education training (TVET) in High Learning Institutions. A well-designed curriculum must be used in order to accomplish this mission. However, some TVET trainers in higher education institutions in developing countries including Rwanda encounter difficulties in performing this function. As a result, this study was raised to investigate the difficulties TVET Trainers encountered when implementing CBT in Rwanda's public higher education institutions.

1.1. Problem Statement

Trainers for Technical and Vocational Education and Training (TVET) in Higher Learning Institutions are essential to producing excellent and competent graduates. A curriculum must be used to accomplish this. Effective performance of duties is crucial for trainers. To carry out their duties successfully, trainers must possess the necessary knowledge and abilities. The structure and guiding principles of the curriculum must be understood by trainers. A well-developed process for monitoring and evaluating the work of trainers should be present in professional development programs, particularly during implementation.(Turner et al., 2017). However, some TVET Trainers in higher education institutions in developing countries face difficulties in carrying out this role. According to (Mezieobi, 1993), The process of carrying out a decided-upon plan, decision, proposal, idea, or policy is known as implementation. The planned learning and teaching materials that teachers give their students in schools are referred to as curriculum. The Rwanda Polytechnic curriculum incorporates technology-based technical and vocational training along with education, enabling the beneficiary to create jobs for both their own personal development and the advancement of the country. A curriculum, according to (Esu et al., 2004), is a learning experience that a learner has under the supervision of a teacher. To effectively teach, the teacher must understand the appropriate pedagogical strategies and methods. Therefore, in Rwanda, many trainers in TVET institutions complain about the challenges they face in their daily activities. This study comes into existence to examine the challenges faced by TVET trainers in implementing CBT in public High Learning Institutions in Rwanda, especially in Rwanda polytechnic.

This study aims to address the following key issues:

1. To describe the trainers' perception on CBT in Rwanda Polytechnic;
2. To investigate the trainers' challenges in implementing CBT;
3. To describe how to help trainers to address the challenges they face in implementing CBT.

II. REVIEW OF LITERATURE

2.1. TVET CONCEPT

The components of the field that are now known as Vocational Education Training have been referred to by a variety of names throughout history. These include apprenticeships, technical education, vocational education, vocational education and training, career and technical education (CTE), workforce education (WE), company education (WE), and so forth. Some of these terms are widely used in particular regions of the world. (Eichhorst et al., 2015).The study of technologies and related sciences, as

well as the acquisition of practical skills, attitudes, understanding, and knowledge related to occupations in various areas of economic and social life, are all included in the definition of TVET, which is those aspects of the educational process outside of general education. (SZPILSKA & STERNBERG, 2012). It is a way to effectively get ready for professional fields and participate in the workforce. It also implies preparation for responsible citizenship and lifelong learning. Technical education, vocational training, on-the-job training, and apprenticeships are all included in TVET's broad definition, whether they are provided in a formal or informal setting. (Education, 2010).

According to (Saidu & KOLIRO, 2016), TVET is thought of as a training and learning activity that leads to the acquisition of information, comprehension, and skills required for employment or self-employment. Here, the term TVET is a term that is used to describe all kinds of learning, including formal, informal, and non-formal education, as well as education that is provided by or occurs in a range of organizations, businesses, and settings for learning (Hagos Baraki & van Kemenade, 2013). TVET's primary objective is to get young people ready for the workforce. This continues to be the main objective in many developing nations, including Rwanda, making VET an important component of the educational agenda. But the global technological revolution necessitates higher levels of knowledge and technological proficiency for the twenty-first century, which is a crucial objective for all educational initiatives and reforms, including vocational education. (Schneider, 2013).

2.2. TVET Education History in Rwanda

Technical and vocational education and training in Rwanda has a long history and has gone by various names and the following milestones influenced Rwanda's vocational education (Minani & Sikubwabo, 2022). They went on to highlight that before 1979, Rwanda used to provide vocational education tailored to gender beliefs, but there was no law enforcing its implementation, and the country's National Qualification Framework hadn't yet been created. Girls, for instance, were enrolled in Ecoles Familiales. (schools for family provisions). These were only for females who had completed their primary education, and the course lasted two years. Contrarily, boys were permitted in training facilities for the arts referred to as CERARs (Centre d'Enseignement Rural et Artisanal). Like their sisters, they were also being trained for a period of 2 years as well (Mporananayo & Ng'umbi).

From 1979 to 2008, Rwanda introduced centers for Integrated Arts training in rural areas known as CERAI in French which means Centre d'Enseignement Rural Artisanal Intégré and Public Technical Schools known as ETO in French meaning École Officielle Technique). These schools provided certificates of completion. Furthermore, there was short training for youth to last 6 months known as Centers for Youth Training (CFJ) in French meaning Centre de Formation des Jeunes until the establishment of the Workforce Development Authority (WDA) in 2008 (Rukundo & Sikubwabo, 2021).

Through VTC and TSS, or Vocational Training Centers and Technical Secondary Schools, WDA was tasked with providing strategic training to address development challenges across the nation. (TSS). The law no 03/March/2009 established WDA. Since June 2012, TVET training in RWANDA has been conducted following the Rwanda TVET Qualification Framework (RTQF), which was established in 2009. (Mporananayo & Ng'umbi).

Additionally, for academic progression and qualification framework, graduates from VTCs and TSS were admitted to the Integrated Polytechnic Regional colleges (IPRCs). While IPRCs: Integrated Polytechnic Regional Colleges work under Rwanda Polytechnic (RP), which was established in 2017 by law, VTCs and TSSs became TVET schools in 2020 and are governed by the Rwanda TVET Board (RTB), N° 22/2017 OF 30/05/2017 but become operational since March 2018 (MINEDUC, 2020)

2.3. Impact of TVET in National Development

According to Article 26 of the Universal Declaration of Human Rights, technical and vocational education is a human right. The primary reference for Rwanda's TVET Policy seeks to establish TVET as a necessary component of the educational system (Kronner, 2005). The existence and possession of transferable and renewable skills and knowledge are becoming increasingly important to the future success of nations, as well as of individuals, businesses, and communities. Many people in both developed and developing nations are aware of how crucial VET is in giving people the knowledge and skills they need to participate successfully in social, economic, and technological innovation processes. (Education, 2010).

Technical Vocational Education and Training (TVET) systems in Rwanda are essential to the social and economic advancement of the country (van Halsema, 2017). They are constantly exposed to the forces of change in society, business, and

education because of their dynamism. frequently influenced by the demands of the local community and changing economy. VET's significance today is less of a concern than how to ensure its relevance, adaptability, and worth in a more globally interconnected economy. A severe lack of qualified workers, particularly in the technical sectors, characterizes Rwanda's economy. In order to create competent human resources for economic and social development, it is therefore the aim of education and TVET to combat ignorance and illiteracy (Omole & Omole, 2020).

According to (Gyimah, 2020), TVET policy must be connected to employment and other sector development policies to address the critical shortage of skilled technical and vocational workers in the labor market. Furthermore, the objective of TVET policy is to train citizens who can contribute to long-term growth and the reduction of poverty by providing training opportunities to all social groups without discrimination, as well as to supply the economy with qualified and competitive workers. People must be given the ability to contribute to sustainable, long-term development to realize the goals of democratization and social, cultural, and economic development.

2.4. Competence-Based Training Concept

Competency-based training (CBT) is an industry-driven education and training program built on clearly defined industry-generated standards in which skills, knowledge, and attitudes are specified to define, steer, and aid in achieving competence standards. Typically, CBT is done within a framework of national qualifications. (Anane, 2013). The design and development of curricula, tests, and learning resources are built upon these industry standards. He went on to explain that the CBT program places more emphasis on measuring the trainee's expected output at work than it does on the theoretical knowledge they have learned. According to (Alainati, 2021), CBT is a training course that guarantees students acquire the knowledge, abilities, attitudes, and values required to succeed in the workplace. Instead of focusing on an individual's performance in comparison to others in the group, its main objective is to give people the skills and knowledge they need to meet industry-specific standards. (Oraison et al., 2019).

The United States of America (USA) is where the implementation of a contemporary competency-based training concept of education in the world began as part of efforts to reform teacher training education in the early 1960s. (Hodge & Harris, 2012). Prior to that, models of vocational training from the 1920s and 1930s already included the creation of mastery learning models and the application of scientific management to work roles. (Larson, 2017). Studies show that the CBT system's application has expanded and broadened to include a range of elements in defining competence. (Muse & McManus, 2013) Many countries have formally adopted and integrated the CBT system into their educational systems, including Australia, the United Kingdom, New Zealand, and Canada. (Gammie & Joyce, 2009). The development and delivery of technical and vocational education around the world were influenced by the effectiveness and relevance of the CBT system. In some countries, like Rwanda, it also served as the impetus for numerous educational reforms.

To address the problem of a skills shortage in Rwanda's educational system, a shift to a competency-based curriculum has become necessary due to the desire to create a knowledge-based society and the increased regional and global competition in the job market. With CBT, students can use what they have learned in practical settings and improve their own lives with the help of their teachers, whose roles are crucial to the successful delivery of the curriculum. A curriculum that aims to improve students' skills, abilities, and competencies based on their prior experiences is known as CBT (Nsengimana et al., 2020). Originally from the United States, CBT later expanded to other countries in Europe, Asia, and Africa, including Rwanda (Eichhorst et al., 2013). They then explained that in TVET schools they call it competency-based training, a learning model where the required level of knowledge and skill (competence) for a task must be demonstrated before moving on to the next task. It takes learning to the next level by providing challenging and engaging learning experiences that require deep thinking rather than just memorizing. It emphasizes what learners can do rather than what they know (Gyimah, 2020).

Additionally, CBT is a methodical approach to training and assessment with a focus on reaching particular objectives. It focuses on helping people acquire the knowledge and skills they need to complete a task under given circumstances to a certain standard. (Hodge & Harris, 2012). CBT clearly states the desired outcomes so that learners understand exactly what they must be able to do, trainers must understand what training or learning is to be provided, and organizations understand the skill levels expected of their employees.

CBT principles, according to (Jones & Voorhees, 2002) include: student-centered as an active participant, the student develops learning objectives and is accountable for his or her own learning activities in terms of time and rate. As a coach, the lecturer helps students develop these skills. Task-Based Learning: learning activities that are aimed at completing a professional task. This ensures that learning is active rather than passive. Competency-based: Learning tasks are designed to assist students in developing the skills required to perform professional tasks in their future workplace.

According to (Stefaniak & Tracey, 2015), learner-centered teaching strategies are advised. Individual, pair, and group activity learning, educational visits to various relevant institutions and organizations, role-playing, debates, demonstrations, question-and-answer techniques, and teacher exhibitions are some of these. To ascertain whether intended outcomes have been internalized and competencies have been mastered, learners are expected to undergo regular assessments. (Muraraneza & Mtshali, 2018).

The goal of Rwanda is to create an innovative curriculum fit for the twenty-first century that will unleash the potential of every student and empower every young Rwandan to contribute significantly to the long-term development of their country. The CBT approach takes into account the unique needs, interests, skills, and backgrounds of each learner while also fostering an environment in which learning activities are structured in a way that motivates students to actively construct knowledge, either alone or in groups.

2.5. Characteristics of CBT Teaching Approaches

The most important feature of CBT is that it gives knowledge and skill acquisition more weight and gives it priority over time spent. The CBT system holds that regardless of how long it takes, students advance by proving their competence, which they do by showcasing that they have mastered the knowledge and skills (referred to as competencies) required for a specific course. The fundamental components of CBT have been thoroughly discussed by (Foyster, 1990) and they are still applicable to the modern CBT concept. Some of the essential traits of competency-based programs include but are not limited to the following:

1. For the CBT system, the required study-related skills must be carefully chosen.,
2. Practice of the skill is combined with the supporting theory, and the required knowledge is learned to underpin the performance of the skill.,
3. The comprehensive training materials are designed to support the acquisition of knowledge and skills and are crucial to achieving the competencies that are required.
4. As they begin the program, participants' knowledge and skills are evaluated, and those with sufficient knowledge and skills may forego education, training, or competencies.
5. The concept of mastery learning, which is incorporated into instructional methods, holds that everyone can learn the necessary information or skills given enough time and the appropriate training techniques
6. Flexible training techniques, such as large-group exercises, small-group discussions, and individual study, are crucial components.
7. A properly constructed CBT system should benefit both the employer and the employee. The CBT system's assurance that cooperative training and professional development activities are affordable, goal-oriented, and profitable for the employer is one of its benefits. By acquiring additional skills that are valued by the company, it also enables employees to be more proactive outside of their specific roles. CBT also clarifies expectations for employees and improves management-employee communication, enabling them to make better decisions and do their jobs more effectively.

2.6. Impact of the CBT Approach on the Quality Education in TVET

The CBT method of teaching and learning in Rwanda's technical and vocational education has many benefits over the traditional subject-based approach. The structure and development of the curriculum, the mode of delivery, student qualification, promotion, and assessment are all significant variables. A CBT candidate's qualification is based on the achievement of specific competencies to specific standards that are non-theoretical and relate entirely to a specific occupation, profession, or vocation, hence the term in which the learner engages (Rahman & Raihan, 2013). In contrast to subject- or course-based systems, which

only indicate that the holder has successfully completed a course without specifying the level of competencies, these systems do not specify the level of competencies (Klein-Collins, 2012). The purpose of technical education is to prepare graduates for occupations that fall outside of the realm of science and engineering and above manual trades. (Hawkins, 2011). The certification demonstrates the holder's versatility and provides evidence that they have learned a particular subject. The CBT program's curriculum structure is another essential element.

In contrast to the traditional subject-based approach, which bases curriculum structure and administration on time spent in training and the assumption that knowledge will be gained, the CBT system bases curriculum structure on competencies derived from industry needs based on endorsed national standards. National standards are upheld, and candidates are assured that the awards will be consistent in order to achieve the desired results. Breaking away from the conventional classroom model where each student is taught the same material at the same pace is the main objective of competency-based learning. (Monat & Gannon, 2018).

The goal of the CBT approach is to identify specific competencies or skills in students through targeted learning processes. As a result, students can complete each of these competencies or skills at their own rate of learning. (Gervais, 2016). In addition to offering a more individualized path to course completion, the competency-based approach is designed to demonstrate learning in precisely defined competencies. It places a strong emphasis on using real-world projects for authentic assessment to determine what the learner knows and can do. (Klein-Collins, 2012).

2.7. Role of the Trainer/Teacher in CBT Implementation

The role of the teacher is central to educational change, and theories of change that ignore the personal sphere are doomed to fail. (Moodley, 2013). The importance of teachers cannot be understated because, without a supportive process aimed at enhancing their role, policy changes would not have the desired impact. (Smit, 2001). From this perspective, (Zheng & Borg, 2014) assert that teachers must adhere to a directive given by curriculum designers that is compatible with competency-based strategies.

On the other hand, adequate infrastructure, including buildings, machinery, tools, and materials, must be offered for the curriculum to be implemented successfully. As key players in the delivery of curriculum, teachers must possess the necessary expertise to involve their students in the learning process for competency-based approaches to succeed. (Botha & Reddy, 2011). To accomplish this goal, educators must also be experts in their fields. (Moodley, 2013). Teachers are the final users of curriculums, and if they are unaware of their objectives, a curriculum may not be successfully implemented (Mwanza, 2017).

Therefore, to properly interpret a curriculum, teachers must be aware of the theoretical foundations of that curriculum. Furthermore, (Mwanza, 2017) argued that to create pertinent solutions when revising the curriculum, curriculum developers should become familiar with the problems faced by the curriculum's end users. (Govender, 2018), suggested that for a curriculum to be successful, teachers must accurately interpret it for students. As a result, for a curriculum to be successfully implemented during the competence-based curriculum implementation phase, teachers' knowledge of the curriculum is crucial.

2.8. Administrative and Professional Support in CBT Implementation

According to (Bakir et al., 2016), Administrative and professional support is necessary for teachers to be successful and for new initiatives to be put into action. Even though there are many different types of areas of support, the literature prioritizes administrative influence, related administrative roles, and professional development opportunities, supporting the need to emphasize these areas for the successful implementation of a new curriculum. Attainment of particular competencies to particular standards non-theoretical and relate exclusively to a particular occupation, profession, or vocation, hence the term in which t The purpose of technical education is to prepare graduates for occupations that fall outside of the realm of science and engineering and above the manual trades. (Cetin, 2016). According to recent research, whether or not teachers feel supported and at ease with the implementation of new curricula depends greatly on administrative support and professional development opportunities. (Bakir et al., 2016). The way the administration and teachers implement the curriculum will also be influenced by their attitudes. (Thorn & Brasche, 2015).

The administration's attitudes and perspectives have been shown to have an impact on teachers' perceptions in numerous studies that have examined the factors that influence the success or failure of new initiatives, particularly the implementation of

new curricula. (Derrington & Campbell, 2015). They continued by pointing out that an administrator's unfavorable attitude toward the initiative might distort teachers' perspectives, which would prevent the initiative from being implemented.

The growth of respect and trust between parties is directly impacted by a principal's capacity to influence an innovation. (Park & Ham, 2016). To bolster this notion, (Mehdinezhad & Mansouri, 2016) looked at the leadership traits of principals and teachers. It has been established that these two topics have a close relationship. Principals' encouraging influence and encouragement of teachers' intellectual development stood out as important factors supporting teachers' effectiveness.

Self-efficacy is essential for principals to positively influence and support teachers as they go through changes that demand action. (Budak, 2015). (Budak, 2015), discovered that creating a positive culture that is adaptable to change required trust-building as well as principals' attitudes toward setting visions and goals. This finding is consistent with research presented by (Mehdinezhad & Mansouri, 2016).

2.9. Challenges Affecting the Implementation of CBT

A competency-based curriculum is much more effective in assisting students in developing the competencies required to carry out specific tasks in developing nations, including Rwanda, but its implementation presents several difficulties for institutions. Among them are: A larger class size tends to affect student-teacher interactions and may also discourage peer sharing during class discussions, which can hinder curriculum goals. At all levels, there is a lack of infrastructure that would enable students to actively engage in the learning process, such as modern classrooms, creative hubs, smart boards, labs, and the newest technologies.(Amunga et al., 2020).

Additionally, there are problems with teacher motivation, a lack of appropriate tools and equipment, and assessment standards, such as how to measure each student for each achievement outcome, how to find opportunities for students to demonstrate individualized subject proficiency without adhering to standardized achievement outcomes, and who decides student learning outcomes.

III. METHODOLOGY

INTRODUCTION

In this study, researchers used a Qualitative Research design. Qualitative research, according to (Polkinghorne, 2005) is a method of gathering descriptive data from people and observing their behavior in the form of written or verbal words. This design allows the researcher to qualitatively get the relevant data from the respondents. Moreover, it helps in getting a deeper understanding of the topic and explaining its details. Furthermore, it facilitates to predict future situations based on current findings and observations. It also enables researchers to be adaptive to new information, beliefs, attitudes, and concerns about the topic for future research on it. Besides, it can be used to establish theories and hypotheses among others (Gawria & Rousseau, 2020)

3.1. Research Site

This study was conducted among 8 Colleges of Rwanda Polytechnic. So far, Rwanda Polytechnic has eight colleges across the country known as Integrated Polytechnic Regional Colleges (IPRCs). Each College was represented.

3.2. Target Population

According to (Njuguna, 2012) declared that the term "target population" refers to a large group of people who share some observable traits. Trainers from the various Colleges of the Rwanda Polytechnic are the study's target population.

3.3. Sample Size

To support the depth of case-oriented analysis that is fundamental to this mode of inquiry, qualitative studies use very small samples where a relatively small number of people are studied in depth in the context in which they live. Additionally, they purposefully choose their samples, choosing them based on how well they can provide detailed information related to the phenomenon being studied. (Vasileiou et al., 2018).

In this research, Rwanda Polytechnic has eight Colleges; researchers chose 10 respondents. One trainer who has been teaching in CBT at least for two years represents each RP College because this trainer has at least a wealth of information about

the implementation of CBT. Researchers chose two Directors of Quality Assurance, one representing RP College from urban and one representing RP College from rural areas to compare both information from rural and urban colleges.

3.4. Data Collection Tools

The process of gathering information to support or demonstrate some facts is known as data collection. (Kombo & Tromp, 2006). This research applied in-depth interviews which were addressed to the selected trainers and directors of academic services from all colleges of Rwanda Polytechnic.

3.5. Techniques of Data Analysis

In terms of qualitative data, this study's data analysis is based on a technique recommended by (Miles & Huberman, 1994). Data analysis entails three steps: Data reduction, data presentation, and Conclusion Drawing/Verification

IV. DISCUSSIONS OF FINDINGS

Researchers discussed the findings of various data obtained from various respondents in this section.

4.1. Introduction

This study set out to determine what difficulties trainers encountered when putting the competence-based curriculum into practice. This section discusses the analysis that was made using the empirical data that was gathered and making use of earlier research by other scholars. The general points of view put forth by the participants who were contacted for this research served as inspiration for the conclusion section. This study focused Primarily on perception, challenges, strategies, and facilities needed to implement CBT in Rwanda TVET education. The following parts hold the discussion of each point among these; and to keep the academic professionalism, research ethics, and authenticity of the information, the discussion was run on raw findings gathered from trainers of different Rwanda polytechnic colleges.

4.2. Findings

Back on perception of trainers on CBT, results from in-dept interview with trainers have shown that trainers understand the concept of CBT. This is very important to its implementation. (Deißinger & Hellwig, 2005), proves it by arguing that before implementing the CBT, trainers' attitudes and perceptions should be assessed to see on what extend they understand it. Trainers must be enthusiastic about CBT, putting the principles into practice, and overcoming the obstacles and problems that are unavoidable with CBT. This is evident in the trainers' responses, and the researcher appreciated this while on site through his observations. Trainers should be familiar with the CBT philosophy and have a strong belief in the CBT system's potential, as well as be open to venturing into innovations and creation opportunities provided by CBT. (Deißinger & Hellwig, 2005). Furthermore, (Dadi, 2014) argues that trainers' perceptions are crucial components in teaching and learning processes.

In the same context, (Kanyonga et al., 2019) assert that when trainers have a positive attitude toward any training curriculum, it is vital for its successful implementation. According to the trainers 'response to researchers' observations on site, the experienced trainers understand the CBT conception. However, the very serious problem is the high turnover rate of trainers from Rwanda Polytechnic toward other public and private institutions with high remuneration. Different colleges are struggling with several recruitments of trainers which is one of the challenges in implementing the competence-based curriculum.

Therefore, this is very important that Rwanda Polytechnic organizes continuous training for CBT trainers especially for the newly recruited to equip with them experiences on how to implement CBT. For a curriculum to be successfully implemented, trainers and other institutional staff members must be aware of how to use it adaptably, purposefully, and consistently. The Rwanda Polytechnic should establish a system of professional development and training that supports teachers in their day-to-day work and enables all instructors to make the best use of the resources at their disposal to implement the curriculum in a way that meets the needs of both students and society at large.

Every trainer has a different, if not unique, strategy for conducting the teaching and learning process (Kanyonga et al., 2019). This was proven by the respondents' thoughts while responding to the question relating to the implementation of CBT through the teaching and learning process. They implement the CBT in different ways and some of them need additional training. The Directorate of Quality Assurance must work closely with them to help in improving their daily teaching activities.

Moreover, the person who is constantly challenged is the one who does something. People achieve enlightenment through challenges (Tichy & Ulrich, 1984). As a result of focusing on this point, the findings revealed that the dominant challenges are: Financial limitations, late delivery of instructional materials, semester time restrictions, students with weak educational backgrounds in some subjects, large class sizes, poor infrastructure, standardization of assessments, poorly developed and inadequately tailored curricula, and a lot of material to cover quickly are all contributing factors. Findings revealed that trainers need facilities regarding each challenge they face in everyday work for the betterment of CBT implementation.

Even though there are challenges in implementing competence-based training, trainers try to overcome those challenges as they responded through interviews and observations made by the researchers while visiting different colleges of Rwanda Polytechnic across the country. Among the strategies used by trainers to overcome challenges include: Working extra time, using simulation in teaching, using efficiently the available resources they have, etc. Some trainers prefer providing few assessments to learners to gain time which is not good in teaching and learning methods because it has an impact on quality education. Most of the trainers responded that they use group discussion in their teaching as one way to gain time. This is a good method of teaching but it cannot be convenient in practical skills where every learner has to do his/her own practice (Wrenn & Wrenn, 2009)

Academically, facilities are the tools, materials, devices, and infrastructures that a trainer can use daily to conduct teaching-learning activities. Consumables, equipment and tools, computers, projectors, internet, screens, loudspeakers, flip charts, resource rooms, printers, and workshops are just a few examples. They are called facilities because they make it easier to deliver sessions (Hogan, 2005). In the same context, the participants disclosed that among the facilities that they lack the most are enough equipment and materials, to have a flexible workload, in service continuous professional training, many field trips, and sufficient time while developing the curriculum so that it can fit the needs of the country's target.

On the side of administration, they are working hand in hand with trainers to sort out the challenges they face in implementing the CBT even if they revealed in their responses that the big challenge remains is the limited budget allocated to TVET. TVET education is expensive due to consumables and other tools and equipment used in practical training. What sounds good, it is that there is political will even if there are financial constraints to implement it.

V. CONCLUSION AND RECOMMENDATIONS

5.1. Conclusion

To develop highly competent graduates who will stand as actors for industrial development and industry transformation for socioeconomic development, the competency-based training teaching and learning concept was introduced into Rwandan technical vocational educational training to facilitate this development implementation. It has significantly aided in preparing the highly qualified graduates needed by the sector. In this process of teaching and learning, the trainers' role is very crucial once they are aware of the environment they are working in.

Although there are many advantages and opportunities, there are some implementation challenges that have been identified and discussed in this study that must be resolved for CBT to be implemented successfully in Rwandan TVET schools. These challenges are mainly based on insufficient institutional funding from the government which is the main sponsor of public high learning TVET Institutions in Rwanda. These include lack of sufficient infrastructure, lack of enough materials, tools, and equipment to be used in practice, insufficient consumables, lack of ICT equipment both for trainers and learners, insufficient workshops, and class size which has a big number of students. In addition to that the development of trainers in different domains such as training and motivation has been identified that is a big challenge.

Therefore, the CBT curriculum is newly introduced in Rwanda and much has been done even if there is a long journey to go to achieve quality education in TVET. Regardless, the government of Rwanda should not only support the CBT approach to teaching and learning but also various stakeholders in the education community should also contribute to its effective implementation. The study's recommendations are discussed in this research for the government of Rwanda, TVET schools in general, and specifically for Rwanda Polytechnic as high learning TVET institution.

5.2. Recommendations

Despite the challenges that came with the implementation and development of CBT in Rwandan TVET schools, it is making a significant contribution to education at a high rate of qualified and competent graduates that are needed to support industry in Rwanda as well as in the region. However, CBT teaching and learning model to be implemented and developed efficiently and effectively, these challenges must be resolved. The suggestions that are listed below can help Rwandan TVET institutions, the government of Rwanda, and different partners in education to implement CBT more effectively.

- There must be enough budgetary money to support Colleges' staff capacity building and the purchase of various consumables, tools, and equipment that support the teaching and learning process. Additionally, it will aid in the planning of staff training seminars and workshops on CBT. Therefore, the government, development partners, and other stakeholders must increase their budgetary funds for CBT implementation.
- Collaboration between Rwanda Polytechnic and industries needs to be improved to create and implement CBT programs. To keep up with current changes in the job market, the industry and professional bodies must continue to support CBT in the areas of internships and industrial attachment for students and staff.
- The CBT program's structure calls for sufficient facilities and infrastructure to support teaching and learning. In the CBT teaching and learning concept, learners are divided into groups to work on modular projects that call for them to demonstrate their knowledge, skills, and competencies in the subject matter by finishing certain core tasks and assignments. The limited resources of the institutions were further strained as a result. The study's findings indicate that the various colleges of Rwanda Polytechnic lack the necessary infrastructure to fully implement CBT. To relieve the strain on these limited resources, the government and other stakeholders must work together to improve learning.
- Rwanda Polytechnic should make it easier for trainers to obtain scholarships and advance their academic careers. The more they are trained, the deeper their knowledge will become. Not only should RP and IPRCs find academic training programs leading to degrees for trainers to attend, but they should also find short training sessions and seminars for trainers to attend. A trainer who does not interact with other academics does not advance professionally. More importantly, trainers should be taught and encouraged how to integrate technology into their classroom activities.
- The Rwandan Ministry of Education in collaboration with Rwanda Polytechnic should stabilize education and avoid drastic changes that disrupt the system. It should also conduct numerous TVET awareness campaigns to change Rwandan society's perception of TVET as a place for students who have failed academically.
- Rwanda Polytechnic must involve trainers from each subject, in curriculum development and consider their inputs.
- Trainers' motivation is needed to maintain experienced trainers in Rwanda Polytechnic to avoid the high rate of turnover within the different colleges of Rwanda Polytechnic.
- Rwanda Polytechnic through its different colleges should strengthen its income generating to solve problems of the government's insufficient funds.

5.3. Suggestions for Further Study

This research focused on the challenges faced by trainers while implementing CBT in Rwandan TVET institutions, especially in Rwanda Polytechnic. Researchers discovered that, even if TVET institutions have a lot of advantages, they also have some challenges which need to be addressed. As a result, researchers believed that additional research should be conducted in the following potential areas:

1. Evaluation of TVET graduates' performance in the workplace.
2. The effect of industrial attachment on TVET graduates' performance at the workplace.

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